

JAPAN

EDICT OF GOVERNMENT

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JIS B 4710 (1997) (English): Groove cutters for woodworking machines

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

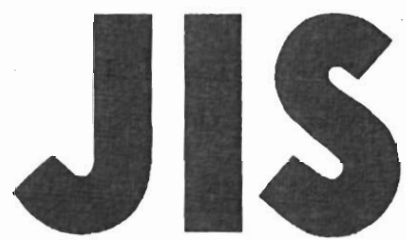
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JAPANESE
INDUSTRIAL
STANDARD

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☞ JIS B 4710 : 1997

Groove cutters for woodworking machines

ICS 79.120.20

Descriptors : grooves, cutting tools, woodworking, woodworking machines

Reference number : JIS B 4710 : 1997 (E)

B 4710 : 1997

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Groove cutters for woodworking machines

1 Scope This Japanese Industrial Standard specifies the groove cutters for wood-working machines (hereafter referred to as "cutter").

Remarks : The following standards are cited in this Standard:

JIS B 0601 *Surface roughness – Definitions and designation*

JIS B 0651 *Surface texture—Instruments for the assessment of surface texture—Profile method*

JIS B 4053 *Hard tool materials and classification of applicability*

JIS B 7420 *Limit gauges*

JIS B 7503 *Dial gauges*

JIS B 7507 *Vernier, dial and digital callipers*

JIS B 7513 *Precision surface plates*

JIS B 7726 *Rockwell and Rockwell superficial hardness testing machines*

JIS G 3101 *Rolled steels for general structure*

JIS G 4403 *High speed tool steels*

JIS G 5501 *Grey iron castings*

JIS Z 2245 *Method of Rockwell and Rockwell superficial hardness test*

2 Quality

2.1 Appearance The appearance of the cutters shall be free from such defects as macro-streak-flaws, cracks, ill adhesion, harmful burrs, nicked edges and rust, and be excellent in finish.

2.2 Surface roughness The surface roughness of the cutting part of the cutter, when measured in accordance with 5.1, shall be $0.8 \mu\text{m}R_a$ or under specified in JIS B 0601.

2.3 Hardness When the test is carried out in accordance with 5.2, the hardness of the cutting part of the cutter made of high-speed tool steel shall be 59 HRC or over.

2.4 Runout The runout of the cutting part of the cutter, when measured in accordance with 5.3, shall not exceed the value of Table 1.

Table 1 Runout of cutting part

Unit : mm

Item	Permissible value
Runout on outer periphery	0.15
Runout on side face	

2.5 Static balance The static balance of the outer periphery of the cutter, when measured in accordance with 5.4, shall be within 3 g.

3 Shapes and dimensions The shapes and dimensions of cutters shall be as shown in Attached Table 1.

4 Materials

4.1 Material of cutting parts The material of cutting parts of cutters shall be SKH 2 specified in **JIS G 4403**, K10·K20·K30 specified in **JIS B 4053** or that having performances at least equivalent in use.

4.2 Material of body The material of bodies of cutters shall be SS330 specified in **JIS G 3101**, FC200 specified in **JIS G 5501** or that having performances at least equivalent in use.

5 Testing methods

5.1 Surface roughness The surface roughness of the cutting part of the cutter shall be measured using the measuring instrument specified in **JIS B 0651** or a measuring instrument having the performances at least equivalent in use.

5.2 Hardness The hardness of the cutting part of the cutter shall be measured in accordance with the testing method of **JIS Z 2245**, using the testing machine specified in **JIS B 7726**.

5.3 Runout The outer peripheral runout on the cutting part of the cutter shall be measured as follows:

Insert a cutter into a test arbor tightly, set it to the center stand being placed on the precision surface plate specified in **JIS B 7513** as given in Fig. 1 (a), apply the dial gauge specified in **JIS B 7503** vertically to the outer peripheral knife, and read the movement of the pointer of the dial gauge while turning the cutter in the direction of the arrow. Consider the difference of the maximum value and the minimum value of the readings to be the measuring value.

The runout on the side face of the cutter shall be measured as follows:

Fasten a cutter with the nut to the flanged arbor, mount it to the center stand being placed on the precision surface plate specified in **JIS B 7513** as given in Fig. 1 (b), apply the dial gauge specified in **JIS B 7503** vertically to the cutting edge, and read the movement of the pointer of the dial gauge while turning the cutter in the direction of the arrow. Consider the difference of the maximum value and the minimum value of the readings to be the measuring value.

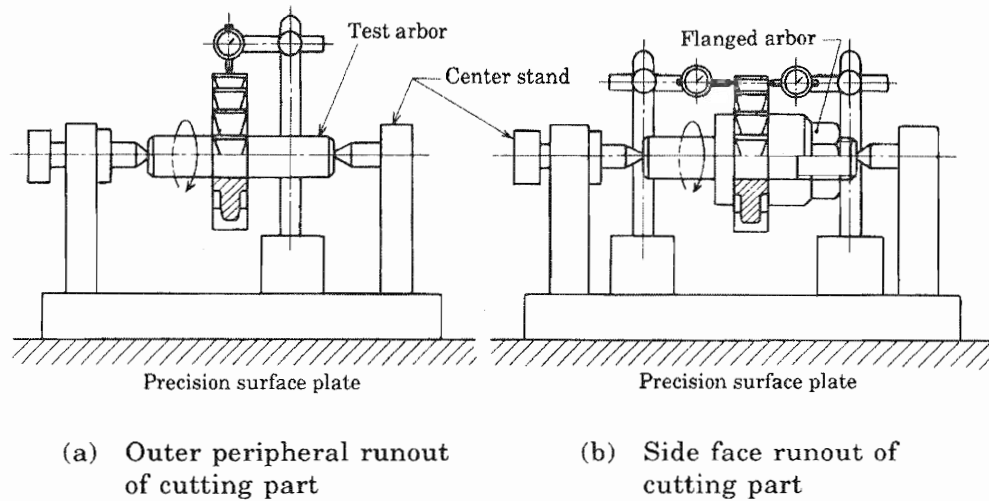


Fig. 1 Measuring method of runout of cutting part

5.4 Static balance As to the static balance of a cutter, insert the cutter into the test arbor tightly, place it on the knife edges for static balance test as given in Fig. 2, find the unbalance, and measure the weight of balancing weight at this time.

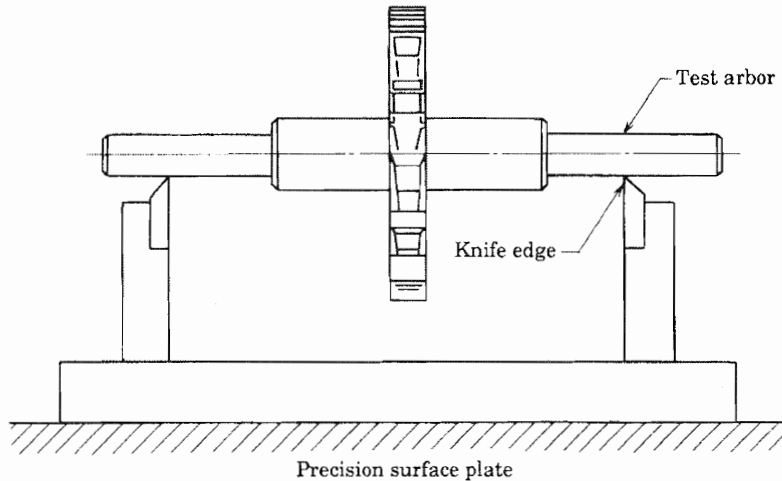

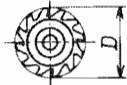


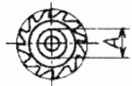


Fig. 2 Measuring method of static balance

5.5 Shapes and dimensions The shapes and dimensions of cutters shall be measured in accordance with Table 2.

Table 2 Measuring methods of shapes and dimensions

Item	Measuring method	Diagram for measuring method	Measuring instrument
Bore diameter	Measure with the limit gauge.		Limit gauge specified in JIS B 7420
Outside diameter	Measure the distance between the confronting cutting edges with vernier calliper.		Vernier calliper specified in JIS B 7507
Length of cutting part	Measure with the vernier calliper.		
Thickness of cutting part	Measure with the vernier calliper.		
Diameter of setting face	Measure with the vernier calliper.		

6 Inspection The inspection of the cutters shall be carried out on the appearance, surface roughness, hardness, runout, static balance, shapes and dimensions, and the results shall conform to the requirements of 2.1 to 2.5 and 3 respectively.

7 Designation The cutter shall be designated by the Standard number or the title of Standard, material of cutting part, number of teeth and dimensions (outside diameter \times thickness \times bore diameter).

Examples : JIS B 4710, SKH 2, 10Z $175 \times 3.3 \times 25.4$
JIS B 4710, K20, 30Z $200 \times 6.0 \times 31.75$

8 Marking

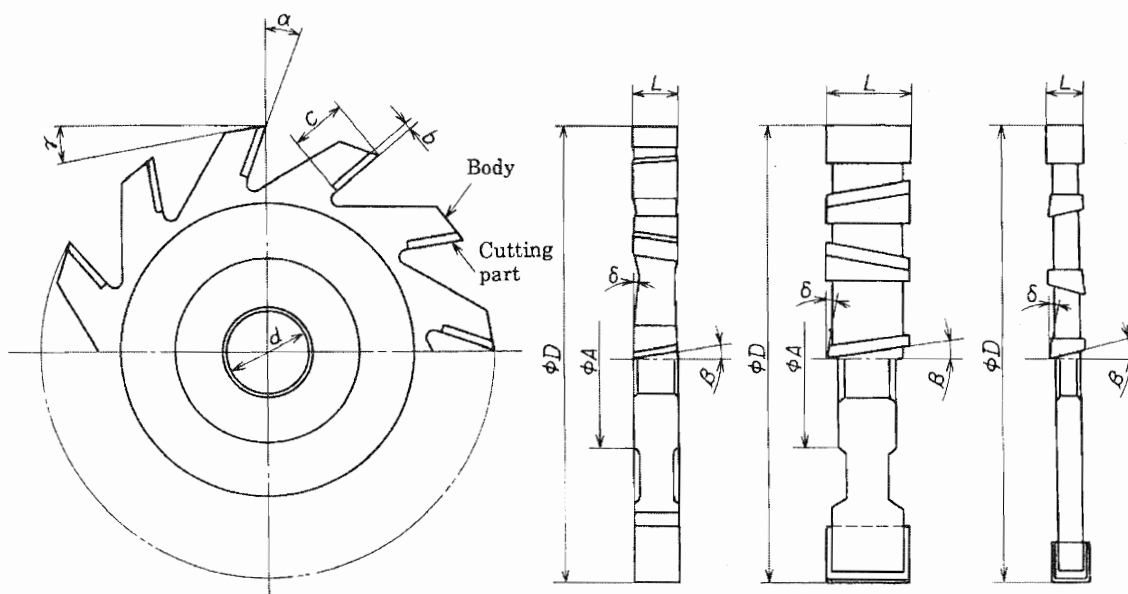
8.1 Marking on products The following information shall be indelibly marked on each product:

- (1) Dimensions (outside diameter \times thickness \times bore diameter)
- (2) Material symbol of cutting part
- (3) Manufacturer's name or abbreviation

8.2 Marking on packages The following information shall be indelibly marked on each package:

- (1) Dimensions (outside diameter \times thickness \times bore diameter)
- (2) Material symbol of cutting part
- (3) Manufacturer's name or abbreviation

Attached Table 1 Shapes and dimensions



Remarks 1 The number of teeth and the shape of the body are not specified.

2 The three types in the side view are shown as an example.

Unit : mm

Outside diameter D		Bore diameter d		Diameter of setting face A	Minimum value of cutting part		Thickness L (Informative reference)	Angles of cutting part (Informative reference)
Basic dimension	Tolerances	Basic dimension	Tolerances	Minimum value	Length c	Thickness b		
120	± 0.5	15.0	$+0.052$ 0	50	5	2	3.3, 3.6, 4.0,	Rake angle α 5° to 25° Side rake β 0° to 16° Peripheral clearance angle γ 7° to 20° Side clearance angle δ 0.5° to 5°
150		25.4		70			4.5, 5.0, 5.5,	
175		30.0		80			6.0, 9.0, 10.0,	
200		31.75		100			10.5, 12.0, 15.0, 21.0	

Remarks : The basic dimension of the bore diameter d is allowed to take other dimensions than those given in Attached Table 1, as agreed between the parties concerned with acceptance.

Errata for JIS (English edition) are printed in *Standardization Journal*, published monthly by the Japanese Standards Association, and also provided to subscribers of JIS (English edition) in *Monthly Information*.

Errata will be provided upon request, please contact:
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